Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (original) A scanning method for moving an optical element positioned on an optical axis of light within a predetermined scanning range, the method comprising the steps of:

moving the optical element at a first speed in a first direction intersecting the optical axis; and

moving the optical element at a second speed different from the first speed in a second direction intersecting the first direction.

2. (original) The scanning method according to claim 1, wherein the optical element is reciprocally moved within the predetermined scanning range in the first direction and the second direction, and wherein the second speed is in a range of 100 Hz to 1 kHz, and the first speed is in a range of 0.1 to 10 Hz.

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3. (original) The scanning method according to claim 1, wherein the optical element is reciprocally moved within the predetermined scanning range in the first direction and the second direction, and wherein the second speed is in a range of 200 to 600 Hz, and the first speed is in a range of 0.2 to 5 Hz.

4. (original) The scanning method according to claim 1, wherein the optical element is reciprocally moved within the predetermined scanning range in the first direction and the second direction, and wherein the second speed is in a range of 300 to 500 Hz, and the first speed is in a range of 0.5 to 2 Hz.

5. (original) The scanning method according to claim 1, wherein the step of moving the optical element in a first direction includes the step of reciprocally rotating the optical element at the first speed about a first axis orthogonal to the optical axis, and the step of

moving the optical element in a second direction includes the step of reciprocally rotating the optical element at the second speed about a second axis orthogonal to the optical axis.

6. (original) The scanning method according to claim 1, wherein the step of moving the optical element in a first direction includes the step of reciprocally sliding the optical element at the first speed along a first axis orthogonal to the optical axis, and the step of moving the optical element in a second direction includes the step of reciprocally moving the optical element at the second speed higher than the first speed along a second axis orthogonal to the optical axis.

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7. (original) A method of testing the intensity of light incident on an optical element positioned on an optical axis of light, the method comprising the steps of:

moving the optical element at a first speed in a first direction intersecting the optical axis;

moving the optical element at a second speed different from the first speed in a second direction intersecting the first direction simultaneously with the movement in the first direction; and

measuring the intensity of the light while moving the optical element.

8. (original) The light intensity testing method according to claim 7, wherein the optical element includes a first optical element under testing, and a second optical element for irradiating the first optical element with the light, wherein either one of the first and second optical elements is moved.

9. (original) The light intensity testing method according to claim 7, wherein the optical element includes a first optical element under testing, and a second optical element for receiving light irradiated from the first optical element, wherein either one of the first and second optical elements is moved.

10. (original) The light intensity testing method according to claim 7, further comprising the step of storing a position of the optical element at which a measured light intensity reaches a maximum.

11. (original) The testing method according to claim 7, wherein the step of moving the optical element in a first direction includes the step of reciprocally rotating the optical element at the first speed about a first axis orthogonal to the optical axis, and the step of moving the optical element in a second direction includes the step of reciprocally rotating the optical element at the second speed about a second axis orthogonal to the optical axis.

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12. (original) The testing method according to claim 7, wherein the step of moving the optical element in a first direction includes the step of reciprocally sliding the optical element at the first speed along a first axis orthogonal to the optical axis, and the step of moving the optical element in a second direction includes the step of reciprocally moving the optical element along a second axis orthogonal to the optical axis at the second speed higher than the first speed.

13. (original) A method of aligning a work positioned on an optical axis of light, comprising the steps of:

moving an optical element positioned to substantially oppose the work at a first speed in a first direction intersecting the optical axis;

moving the optical element at a second speed different from the first speed in a second direction intersecting the optical axis and the first direction, simultaneously with the movement in the first direction;

measuring the intensity of the light while moving the optical element; and

aligning the work based on the result of measurement.

14. (currently amended) The method according to claim 13, further comprising the step of ~~storing the position~~ storing a position of the optical element and the measured light intensity.

15. (original) The method according to claim 14, wherein the step of aligning includes the step of fixing the optical element at a position at which the measure light intensity reaches a maximum, and moving the work along the optical axis.

16. (original) The method according to claim 13, wherein the work has a tube, a collimation lens and a capillary disposed in the tube, and an optical fiber disposed in the capillary, and the step of aligning includes the step of moving the optical fiber along the optical axis.

17. (original) A method of aligning a work positioned to substantially oppose an optical element disposed on an optical axis of light, the method comprising the steps of:

moving the work at a first speed in a first direction intersecting the optical axis;

moving the work at a second speed different from the first speed in a second direction intersecting the optical axis and the first direction, simultaneously with the movement in the first direction;

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measuring the intensity of the light while moving the work; and

aligning the work based on the result of measurement.

18. (currently amended) The method according to claim 17, further comprising the step of ~~storing the position~~ storing a position of the work and the measured light intensity.

19. (original) The method according to claim 18, wherein the step of aligning includes the step of holding the work at a position at which a measured light intensity reaches a maximum, and moving the work along the optical axis.

20. (original) The method according to claim 17, wherein the work has a tube, a collimation lens and a capillary disposed in the tube, and an optical fiber disposed in the capillary, and the step of aligning includes the step of moving the optical fiber along the optical axis.

21. (original) A scanner comprising:

an optical element positioned on an optical axis of light;

a scanning mechanism for movably holding the optical element in a first direction intersecting the optical axis and for movably holding the optical element in a second direction

intersecting the optical axis and the first direction, simultaneously with a movement in the first direction; and

a controller for controlling the scanner, the controller moving the optical element at a first speed in the first direction and moving the optical element at a second speed different from the first speed in the second direction.

22. (original) A tester for testing a work comprising:

an optical element positioned on an optical axis of 30 light;

a scanning mechanism for movably holding the optical element in a first direction intersecting the optical axis and for movably holding the optical element in a second direction intersecting the optical axis and the first direction, simultaneously with a movement in the first direction;

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an optical sensor for measuring the intensity of light passing through the work; and

a controller for testing the work based on the measured intensity of light, the controller controlling the scanning mechanism to move the optical element at a first speed in the first direction and move the optical element at a second speed different from the first speed in the second direction.

23. (original) A tester for testing a work comprising:

an optical element positioned on an optical axis of light;

a work holder for holding the work to oppose the optical element;

a scanning mechanism for movably holding at least one of the optical element and the work in a first direction intersecting the optical axis and for movably holding at least one of the optical element and the work in a second direction intersecting the optical axis and the first direction, simultaneously with a movement in the first direction;

an optical sensor for measuring the intensity of light passing through the work; and

a controller for testing the work based on the measured intensity of light, the controller controlling the scanning mechanism to move at least one of the optical element and the work at a first speed in the first direction and move at least one of the optical element and the work at a second speed different from the first speed in the second direction.

24. (original) The tester according to claim 23, wherein the controller includes a storage device for storing a position of the work or the optical element, and a measured light intensity.

25. (original) The tester according to claim 23, wherein the work is fixed, and the optical element is moved by the scanning mechanism.

26. (original) The tester according to claim 23, wherein the optical element is a mirror, and the sensor measures the intensity of reflected light from the mirror.

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27. (original) The tester according to claim 23, wherein the optical element is a lens, and the sensor measures the intensity of light which transmits the lens.

28. (original) An apparatus for aligning a work comprising:

an optical element positioned on an optical axis of light;

a work holder for holding the work to oppose the optical element;

a scanning mechanism for movably holding at least one of the optical element and the work in a first direction intersecting the optical axis and for movably holding at least one of the optical element and the work in a second direction intersecting the optical axis and the first direction, simultaneously with a movement in the first direction;

an optical sensor for measuring the intensity of light passing through the work; and

a controller for controlling the scanning mechanism, the controller controlling the scanning mechanism to move at least one of the optical element and the work at a first speed in the first direction and move the optical element at a second speed different from the first speed in the second direction.

29. (original) The apparatus according to claim 28, wherein the work has a tube, a collimation lens and a capillary disposed in the tube, and an optical fiber disposed in the capillary, and the aligning apparatus further includes an adjuster for movably holding the optical fiber along the optical axis, the adjuster changing the distance between the collimation lens and the optical fiber.

30. (original) The apparatus according to claim 29, wherein the controller includes a storage device for storing a moving distance of the optical fiber along the optical axis.

31. (original) A method of aligning a work having an optical fiber and a collimation lens, the method comprising the steps of:

rotating a mirror disposed on an optical axis of the work to irradiate the work with reflected light about a first axis and a second axis orthogonal to the optical axis over a relatively wide range;

capturing reflected light passing through the work while rotating the mirror;

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measuring the intensity of the reflected light while rotating the mirror in a relatively narrow scanning range near a position of the mirror at which the reflected light is captured, the mirror being rotated about the first axis at a first speed and being rotated about the second axis at a second speed higher than the first speed;

storing a maximum value of the measured light intensity and the position of the mirror;

moving the optical fiber along the optical axis by a predetermined distance;

measuring the intensity of the reflected light while rotating the mirror in a relatively narrow scanning range near the stored position of the mirror, the steps of rotating, storing and moving being repeated until the maximum value of the measured light intensity becomes smaller than the stored maximum value of the light intensity;

returning the position of the optical fiber by the predetermined distance when the maximum value of the measured light intensity is smaller than the stored maximum value of the light intensity; and

fixing the optical fiber at the returned position.

32. (original) The method according to claim 31, wherein the first speed is in a range of 0.1 to 10 Hz, and the second speed is in a range of 100 Hz to 1 kHz.

33. (original) The method according to claim 31, further comprising the step of sliding the mirror along the first axis and the second axis after rotating the mirror in the relatively narrow scanning range.